

I Claim:

1. A method of determining the glucose content of a body tissue specimen, which comprises the steps of:

irradiating the specimen with laser light modulated at a predetermined pulse repetition rate to cause said specimen to re-emit light at said pulse repetition rate;

5 receiving the light re-emitted from the specimen to produce a corresponding electrical signal modulated at said pulse repetition rate;

amplifying and filtering said electrical signal;

controlling said irradiation of the specimen by said amplified and filtered electrical signal;

10 decoding said amplified and filtered electrical signal to produce a decoded signal;

generating variable frequency pulses in accordance with said decoded signal;

and counting said pulses over an interval of time determined by the specimen irradiation in accordance with said amplified and filtered electrical signal.

2. A method according to claim 1, wherein said amplified and filtered electrical signal controls the duration of laser irradiation of the specimen.

3. A method of measuring the level of a selected physiological component of a body tissue specimen, which comprises the steps of:

directing laser light onto the specimen to cause the specimen to re-emit light;

collecting light coming from the specimen;

5 and quantifying the collected light from the specimen as a measure of said selected physiological component of the specimen.

4. A method according to claim 3, wherein said selected physiological component is blood glucose.

5. An apparatus for measuring the level of a selected physiological component of a body tissue specimen, which comprises:

means for directing laser light onto the specimen to cause the specimen to re-emit light;

5 means for collecting light coming from the specimen;

and means for quantifying the collected light from the specimen as a measure of said selected physiological component of in the specimen.

6. Apparatus according to claim 5, wherein said selected physiological component is blood glucose.

7. Apparatus for determining the blood glucose content of a body tissue specimen, which comprises:

a laser for irradiating the specimen with laser light;

5 a driver for energizing said laser and modulating said laser at a predetermined pulse repetition rate to cause said specimen to re-emit light at said pulse repetition rate;

photoelectric means for receiving the light re-emitted from the specimen to produce a corresponding electrical signal modulated at said pulse repetition rate;

an amplifier connected to said photoelectric means for amplifying and filtering said electrical signal therefrom, said amplifier having an output connected to said driver for
10 determining the duration of energization of the laser by the driver;

a decoder connected to the output of said amplifier for decoding said amplified and filtered electrical signal from the specimen to produce a decoded signal;

a variable pulse generator connected to the output of said decoder for generating variable frequency pulses in accordance with said decoded signal;

15 and a counter connected to the output of said variable frequency pulse generator for counting said pulses over an interval of time determined by the energization of the laser by said driver.

8. Apparatus according to claim 7, wherein said decoder operates said variable frequency pulse generator so that the final count in said counter at the end of said interval represents the glucose content of said specimen in standard units.